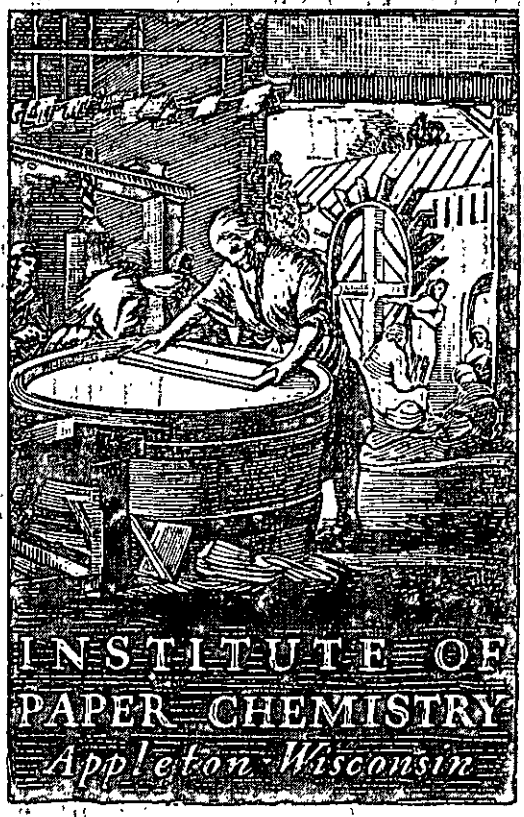

CONTINUOUS BASELINE STUDY

Project 1108-13

Progress Report 139

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

January 1, 1959

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

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January 1, 1959

TABLE OF CONTENTS

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

PART I: PRESENTATION AND DISCUSSION OF RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY

In conjunction with the F.K.I. Continuous Baseline Study, The Institute of Paper Chemistry has been directed to identify the participating mills by means of a scrambled system of code letters. Under this system, which was initiated in Progress Report 105, each mill is identified by a code letter different from that used for the previous month.

During the month of December, ninety-seven different sample lots of 42-lb. Fourdrinier kraft linerboard from fourteen different F.K.I. mills were processed at The Institute of Paper Chemistry. A tabulation of the number of samples classified according to mill may be seen in Table I.

These sample lots were tested for basis weight, caliper, bursting strength, and Elmendorf tear. The average strength results for each mill may be seen in Table II and are graphically presented in Figures 1 to 5. In addition to a comparison of the mill averages for the various tests, Table II also shows the current F.K.I. averages, the cumulative F.K.I. averages, and the F.K.I. indexes. The cumulative F.K.I. average is based on the results for the previous twelve months excluding the current period. Hence, in the case of the current report, it covers the period from December 1, 1957, to November 30, 1958. The F.K.I. indexes are obtained as follows:

$$\frac{\text{current F.K.I. average}}{\text{cumulative F.K.I. average}} \times 100 = \text{F.K.I. index (\%)}$$

TABLE I

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL

Mill Code	Number
A	0
B	4
C	9
D	6
E	3
F	20
G	7
H	0
I	6
J	1
K	9
L	4
M	6
N	0
O	0
P	0
Q	4
S	6
T	12
Total	97

TABLE II

SUMMARY OF COMPOSITE MILL AVERAGES--DECEMBER 1 THROUGH DECEMBER 31, 1958

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i. gage	Elmendorf Tear, g./sheet In Machine	Elmendorf Tear, g./sheet Cross Machine
A	No samples submitted.				
B	43.3	12.7	107	327	379
C	43.8	12.7	109	335	382
D	43.5	12.7	116	334	385
E	44.3	13.8	108	335	367
F	43.7	12.3	110	350	390
G	43.0	13.7	105	320	351
H	No samples submitted.				
I	43.1	13.9	109	349	383
J	43.8	13.0	115	316	369
K	43.9	12.8	113	332	368
L	43.1	12.5	110	332	364
M	43.8	12.2	118	347	400
N	No samples submitted.				
O	No samples submitted.				
P	No samples submitted.				
Q	43.0	12.9	110	324	353
S	43.0	13.2	116	298	364
T	44.0	12.8	109	379	411
Current FKI Average:	43.5	12.9	111	334	376
Cumulative FKI Average:	43.3	12.7	112	332	376
FKI Index, %	100.5	101.6	99.1	100.6	100.0

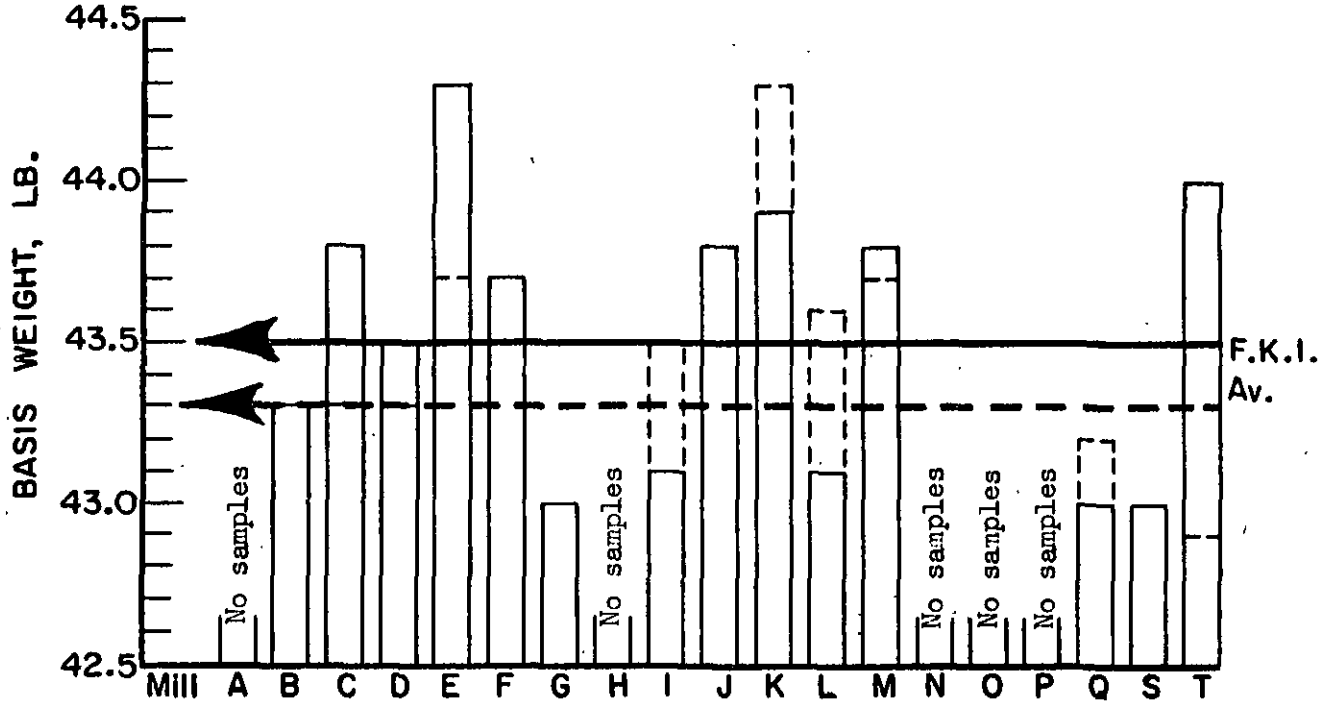

Figure 1

Comparison of Basis Weight Results for December, 1958

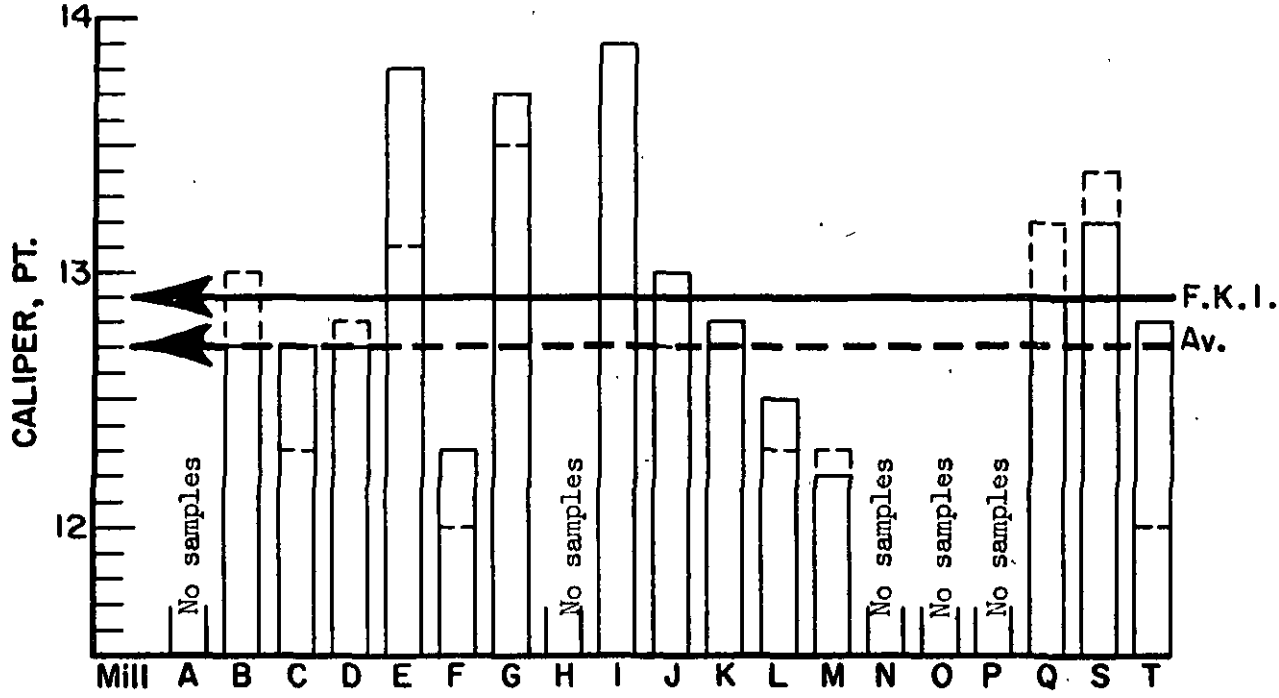

Figure 2

Comparison of Caliper Results for December, 1958

——— Current mill average

- - - - - Cumulative mill average

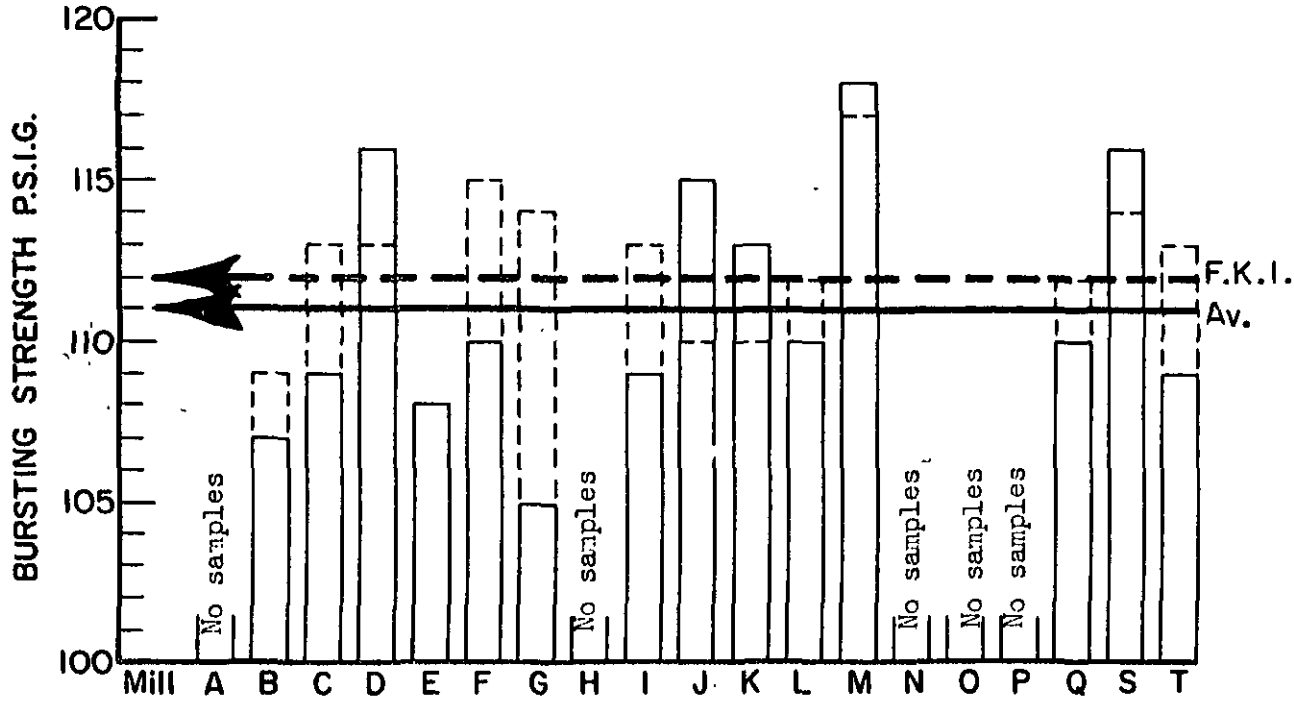

Figure 3

Comparison of Bursting Strength Results for December, 1958

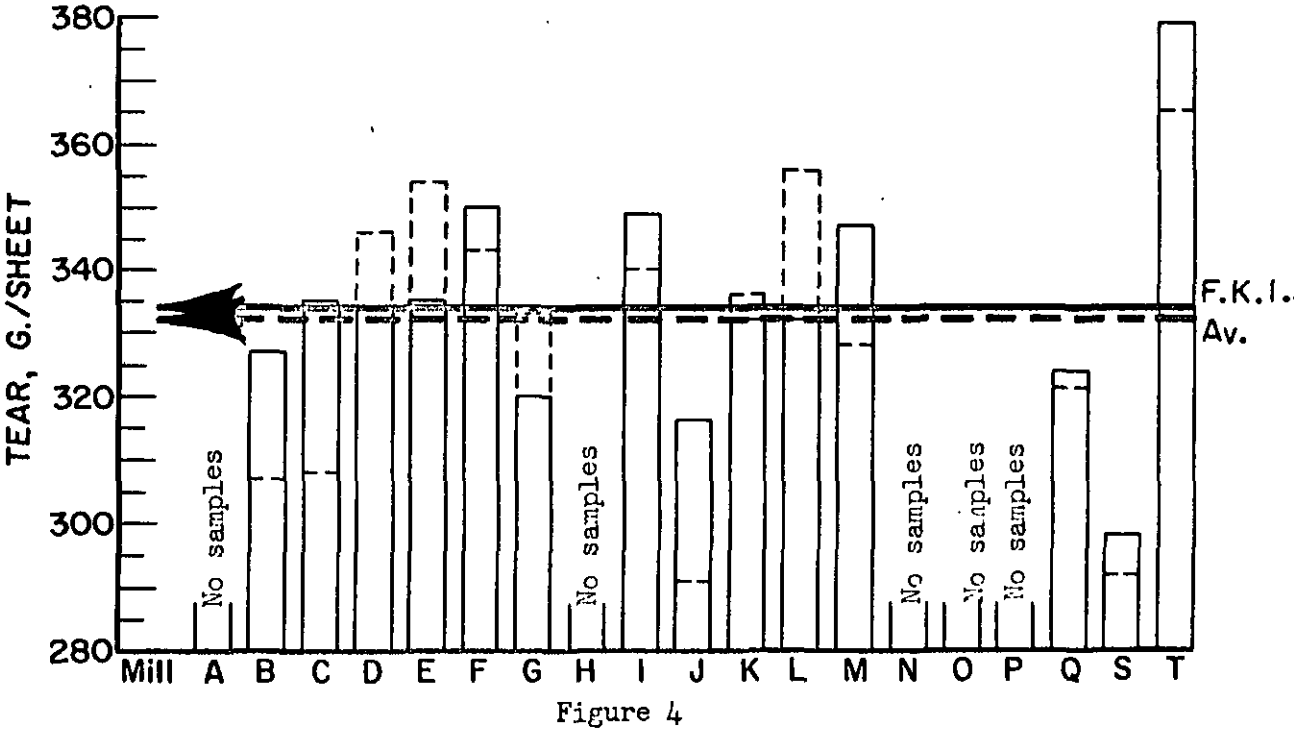

Figure 4

Comparison of Machine Direction Tear Results for December, 1958

——— Current mill average

– – – – – Cumulative mill average

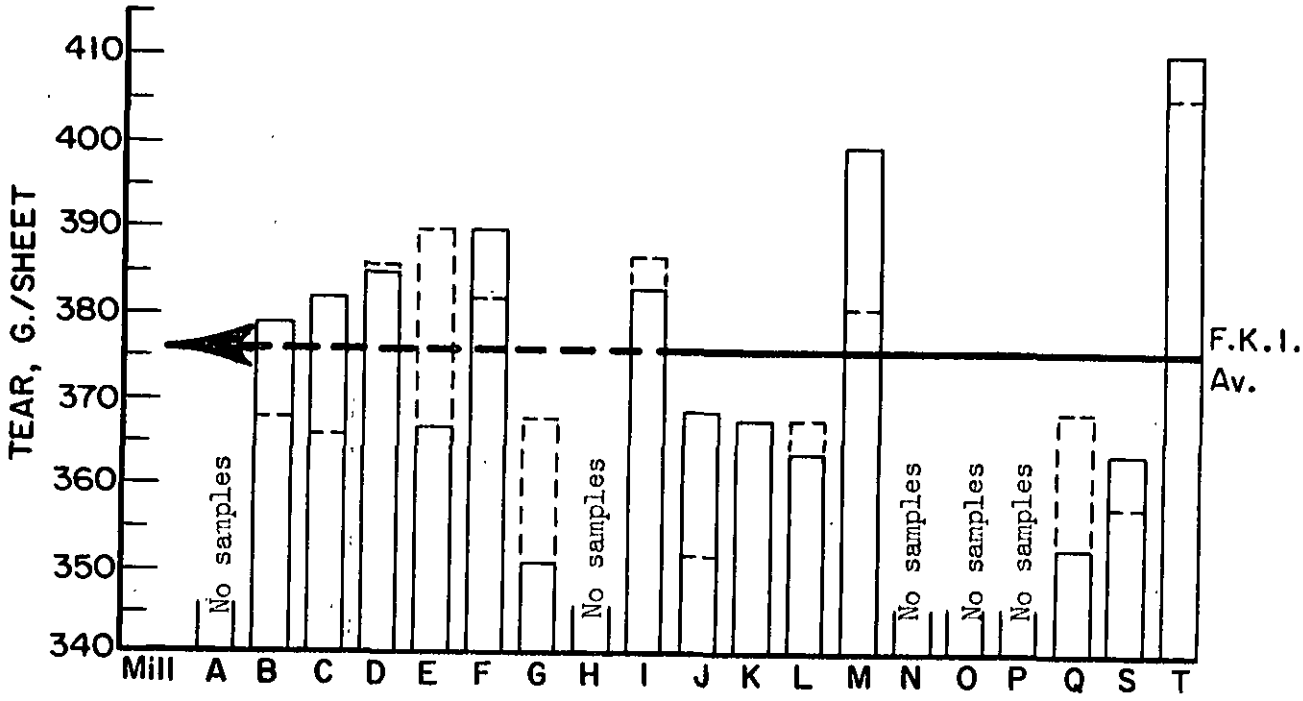

Figure 5

Comparison of Cross-Machine Direction Tear Results for December, 1958

——— Current mill average

– – – – – Cumulative mill average

The F.K.I. index provides a ready means of comparing the current quality with previous results. For example, the current F.K.I. average basis weight is 43.5 lb., and the cumulative F.K.I. average basis weight is 43.3 lb. Hence, the F.K.I. index for basis weight determined in per cent as indicated above is 100.5 and signifies that the current F.K.I. average basis weight is higher than the cumulative F.K.I. average.

A comparison of the results in Table II and Figure 1 shows that the average basis weight results for all mills conform to the 42-lb. specification set forth in Rule 41. Mill E had the highest average basis weight of 44.3 lb. which was approximately 5.5 per cent higher than the 42-lb. specification. The lowest average basis weight of 43.0 lb., which was approximately 2.4 per cent higher than the 42-lb. specification, was shared by Mills G, Q, and S.

The amount by which the mills vary from the 42-lb. specification is shown in Table II-A.

A comparison of the current F.K.I. basis weight average for this period with that for the previous period shows that basis weight is slightly lower for the current period.

A comparison of the average caliper values for the various mills (see Figure 2) shows that the current mill averages varied from a low of 12.2 points for Mill M to a high of 13.9 points for Mill I. The current F.K.I. caliper average is 12.9 points, which is slightly higher than the cumulative F.K.I. average of 12.7 points.

TABLE II-A

PERCENTAGE DEVIATIONS FROM 42-LB. BASIS WEIGHT

SPECIFICATION

Mill Code	Per Cent
A	---
B	+3.1
C	+4.3
D	+3.6
E	+5.5
F	+4.0
G	+2.4
H	--
I	+2.6
J	+4.3
K	+4.5
L	+2.6
M	+4.3
N	--
O	--
P	--
Q	+2.4
S	+2.4
T	+4.8

The average bursting strength values obtained for each mill are graphically presented in Figure 3. It may be observed in Table II and Figure 3 that the current mill averages for bursting strength ranged from a low of 105 for Mill G to a high of 118 for Mill M. The current F.K.I. bursting strength average is 111 p.s.i. gage, which is slightly lower than the cumulative F.K.I. average of 112 p.s.i. gage.

A graphic comparison of the Elmendorf tear results shown in Table II for the various mills is given in Figures 4 and 5. These presentations show that Mill T had the highest machine direction tear average of 379 g./sheet, and Mill S had the lowest average of 298 g./sheet. It may be further noted in Table II that the highest cross-machine direction tear average of 411 g./sheet was obtained on the linerboard from Mill T and that the lowest average of 351 g./sheet was associated with Mill G. It may be observed also in Table II that the current F.K.I. average for machine direction Elmendorf tear is slightly higher than the cumulative F.K.I. average and the current F.K.I. average for cross-machine direction Elmendorf tear is the same as the cumulative F.K.I. average.

A comparison of the F.K.I. indexes indicates that, for the current period, the current F.K.I. averages for basis weight, caliper, and machine direction Elmendorf tear are slightly higher than their respective cumulative F.K.I. averages, the current F.K.I. average for cross-machine direction Elmendorf tear is the same as its cumulative F.K.I. average, and the current F.K.I. average for bursting strength is slightly lower than its cumulative F.K.I. average.

In order to compare the variation within a given mill, the test results for each particular mill have been tabulated in Tables III to XXI for Mills A through T, respectively.

In addition to the current and cumulative average, the mill factor and mill index are given for each mill. The cumulative mill average is the average test result obtained on the samples submitted by the particular mill for the previous twelve months excluding the current period. The mill factor and the mill index are obtained as follows:

$$\frac{\text{current mill average}}{\text{cumulative mill average}} \times 100 = \text{mill factor (\%)}$$

$$\frac{\text{current mill average}}{\text{cumulative F.K.I. average}} \times 100 = \text{mill index (\%)}$$

The mill factor and the mill index are a convenient means for comparing the current mill results either with the previous results for that particular mill or with the cumulative F.K.I. results. The reports also present a comparison of the test data obtained at the mills with test data obtained at The Institute of Paper Chemistry. These test data are presented and discussed on subsequent pages of this report.

It may be noted in Tables III through XXI that the test data include information about the sheet finish. The summarized results for the mills which submitted sample lots during the current period are shown in Table XXI-A.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958

TABLE III

MILL A -- 42-LB. LINERBOARD

File No	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
No samples submitted.																			

TABLE IV

MILL B -- 42-LB. LINERBOARD

180703	WF1S	12/22/58	12/ 4/58	1	44.8	43.2	44.0	13.5	12.6	13.1	127	88	107	416	272	343[a]	440	360	395[a]
180704	WF1S	12/22/58	12/ 5/58	1	44.2	42.4	43.6	13.3	12.0	12.7	139	85	108	368	272	325[a]	416	352	378[a]
180721	WF1S	12/24/58	12/ 8/58	1	44.0	42.0	43.0	13.3	12.1	12.7	125	81	103	360	280	313[a]	400	312	361[a]
180720	WF1S	12/24/58	12/ 8/58	1	43.2	42.0	42.5	12.9	11.6	12.3	133	87	109	376	272	326[a]	448	344	381[a]
Current Mill Average:							43.3			12.7			107			327			379
Cumulative Mill Average:							43.3			13.0			109			307			368
Mill Factor, %							100.0			97.7			98.2			106.5			103.0
Mill Index, %							100.0			100.0			95.5			98.5			100.8

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE V

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
130614	W.F.	12/ 8/58	11/21/58	2	44.4	43.2	43.8	13.2	12.0	12.7	135	86	108	384	288	335	424	328	374[a]
130627	W.F.	12/10/58	12/ 3/58	2	43.4	42.0	42.5	13.0	11.7	12.3	131	87	113	344	272	309	400	328	366[a]
130628	W.F.	12/10/58	12/ 3/58	2	43.2	42.0	42.3	13.0	11.6	12.3	126	85	108	384	280	325	424	320	379[a]
130649	W.F.	12/15/58	12/ 5/58	2	44.2	42.6	43.5	13.2	12.4	12.9	118	81	102	400	304	340	424	344	379[a]
130650	W.F.	12/15/58	12/ 9/58	2	44.0	42.6	43.4	13.4	12.4	13.0	129	82	101	376	232	313	416	320	368[a]
130651	W.F.	12/15/58	12/ 9/58	2	45.6	44.0	44.4	13.8	11.6	12.8	133	88	112	408	312	361[a]	440	360	393[a]
130652	W.F.	12/15/58	12/10/58	2	45.0	43.6	44.4	12.8	11.6	12.4	128	90	110	392	312	344[a]	408	344	378[a]
130653	W.F.	12/15/58	12/10/58	2	45.2	43.6	44.2	14.0	11.9	12.8	139	84	112	416	288	338[a]	416	384	396[a]
130654	W.F.	12/15/58	12/11/58	2	46.0	45.0	45.7	13.5	12.7	13.0	137	87	114	416	320	355[a]	432	368	404[a]
Current Mill Average:							43.8			12.7			109			335			382
Cumulative Mill Average:							43.3			12.3			113			308			366
Mill Factor, %							101.2			103.3			96.5			108.8			104.4
Mill Index, %							101.2			100.0			97.3			100.9			101.6

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE VI

MILL D -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
130586	W.F.	12/ 5/58	11/13/58	2	44.0	43.2	43.8	13.0	12.1	12.7	143	93	116	384	272	324	432	352	386[a]
180644	W.F.	12/12/58	11/18/58	2	44.2	42.6	43.6	13.0	12.2	12.5	149	84	115	400	288	336	416	344	380[a]
180645	W.F.	12/12/58	11/19/58	2	44.2	42.4	43.6	12.9	12.2	12.6	129	100	115	400	280	334	400	344	369[a]
180725	W.F.	12/24/58	11/24/58	2	44.0	43.2	43.6	13.0	12.0	12.6	139	90	117	384	264	317[a]	408	328	373[a]
180726	W.F.	12/24/58	11/25/58	2	43.6	42.6	43.2	13.2	12.8	13.0	132	89	116	376	264	331[a]	448	376	399[a]
180727	W.F.	12/24/58	12/ 6/58	2	43.8	42.4	43.1	13.2	12.8	13.0	142	84	116	384	296	343[a]	448	352	402[a]
Current Mill Average:							43.5			12.7			116			334			385
Cumulative Mill Average:							43.3			12.8			113			346			386
Mill Factor, %							100.5			99.2			102.7			96.5			99.7
Mill Index, %							100.5			100.0			103.6			100.6			102.4

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE VII

MILL E -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180615	W.F.	12/ 8/58	11/13/58	1	44.4	42.6	43.6	14.3	13.1	13.9	125	92	109	416	304	343[a]	384	320	347[a]
180617	W.F.	12/ 8/58	11/25/58	1	46.0	44.0	44.9	14.8	12.8	13.9	136	82	109	424	296	344	432	336	390[a]
180618	W.F.	12/ 8/58	11/28/58	1	45.4	43.6	44.4	14.0	13.0	13.6	131	81	104	368	280	319[a]	416	328	365[a]
Current Mill Average:							44.3			13.8			108			335			367
Cumulative Mill Average:							43.7			13.1			108			354			390
Mill Factor, %							101.4			105.3			100.0			94.6			94.1
Mill Index, %							102.3			108.7			96.4			100.9			97.6

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE VIII

MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180539	W.F.	12/ 1/58	11/18/58	-	45.0	43.6	44.4	13.5	12.6	13.0	126	83	104	416	296	341[a]	416	360	397[a]
180540	W.F.	12/ 1/58	11/18/58	-	45.4	42.8	44.0	13.2	12.2	12.9	123	84	109	432	296	363[a]	472	352	396[a]
180541	W.F.	12/ 1/58	11/17/58	-	43.8	42.2	42.8	12.7	11.4	12.1	121	90	105	392	312	350	424	328	368[a]
180542	W.F.	12/ 1/58	11/13/58	-	45.0	42.4	43.8	13.0	12.1	12.5	135	70	106	464	288	360[a]	432	360	392[a]
180543	W.F.	12/ 1/58	11/14/58	-	44.2	42.2	43.2	12.4	11.5	12.0	134	87	107	368	280	331[a]	416	320	363[a]
180544	W.F.	12/ 1/58	11/14/58	-	44.6	42.4	43.6	13.0	12.1	12.6	116	75	101	384	280	341[a]	408	336	381[a]
180545	W.F.	12/ 1/58	11/14/58	-	45.6	43.2	44.3	12.3	11.4	11.9	128	95	114	384	320	359[a]	432	360	397[a]
180629	W.F.	12/10/58	11/13/58	-	44.6	43.0	44.0	13.2	11.9	12.6	134	91	114	408	304	359[a]	464	360	411[a]
180630	W.F.	12/10/58	11/14/58	-	44.4	43.2	43.8	12.4	11.8	12.1	139	90	115	464	288	345[a]	448	368	399[a]
180631	W.F.	12/10/58	11/14/58	-	44.8	43.0	44.0	12.1	11.2	11.6	135	81	110	392	336	364	448	368	405[a]
180632	W.F.	12/10/58	12/ 1/58	-	45.0	43.0	43.7	13.0	12.0	12.6	132	96	114	448	296	365	432	360	392[a]
180633	W.F.	12/10/58	12/ 2/58	-	43.6	41.0	42.5	12.5	11.0	11.9	132	95	114	352	288	321[a]	432	304	376[a]
180634	W.F.	12/10/58	12/ 2/58	-	45.2	42.4	43.8	12.9	12.0	12.4	138	93	112	408	296	351[a]	416	352	390[a]
180635	W.F.	12/10/58	12/ 4/58	-	44.6	41.8	43.6	12.9	11.8	12.2	131	95	114	376	304	341[a]	448	344	386[a]
180690	W.F.	12/18/58	12/ 6/58	-	44.2	42.2	43.5	12.8	11.7	12.2	137	94	114	384	304	344[a]	424	352	390[a]
180691	W.F.	12/18/58	12/ 7/58	-	44.4	42.6	43.5	13.1	12.2	12.6	133	73	110	400	304	359[a]	432	344	384[a]
180692	W.F.	12/18/58	12/ 8/58	-	44.6	42.2	43.2	12.7	11.5	12.1	150	90	115	384	288	334[a]	432	360	392[a]
180693	W.F.	12/18/58	12/10/58	-	44.4	43.4	43.9	12.9	12.2	12.6	121	94	108	424	280	373[a]	456	376	411[a]
180694	W.F.	12/18/58	12/11/58	-	44.0	42.0	43.5	13.0	12.2	12.7	136	95	109	408	312	354[a]	416	352	385[a]
180695	W.F.	12/18/58	12/11/58	-	46.0	43.0	44.5	13.0	11.0	12.0	141	88	112	376	264	337[a]	416	352	389[a]
Current Mill Average:							43.7			12.3			110			350			390
Cumulative Mill Average:							43.7			12.0			115			343			382
Mill Factor, %							100.0			102.5			95.7			102.0			102.1
Mill Index, %							100.9			96.9			98.2			105.4			103.7

[a] This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE IX

MILL G -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180657	WF1S	12/15/58	10/20/58	2	45.0	42.8	43.7	14.7	13.8	14.2	121	80	105	400	272	336[a]	416	320	361[a]
180658	WF1S	12/15/58	10/27/58	2	44.0	42.0	43.0	14.0	13.0	13.4	128	87	111	384	272	325[a]	432	320	359[a]
180659	WF1S	12/15/58	11/ 2/58	2	43.0	40.8	41.9	13.7	12.5	13.1	128	74	104	336	280	301[a]	408	296	335[a]
180660	----	12/15/58	11/ 3/58	2	44.0	43.0	43.7	15.0	13.5	14.0	132	89	105	392	288	327[a]	384	304	358[a]
180667	WF1S	12/17/58	11/10/58	2	44.4	42.4	43.3	14.0	13.0	13.4	124	73	104	344	272	311[a]	368	336	356[a]
180668	WF1S	12/17/58	11/14/58	2	42.4	40.6	41.5	13.5	12.7	13.1	127	78	103	360	264	301[a]	360	296	330[a]
180669	WF1S	12/17/58	11/17/58	2	46.0	42.6	43.9	15.1	14.0	14.6	117	84	102	384	280	337[a]	424	312	355[a]
Current Mill Average:							43.0			13.7			105			320			351
Cumulative Mill Average:							43.0			13.5			114			333			368
Mill Factor, %							100.0			101.5			92.1			96.1			95.4
Mill Index, %							99.3			107.9			93.8			96.4			93.4

TABLE X

MILL H -- 42-LB. LINERBOARD

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XI

MILL I -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180556	----	12/ 1/58	11/25/58	2	44.6	42.6	43.7	14.6	13.0	13.8	129	74	102	408	280	348[a]	408	336	375[a]
180585	WF1S	12/ 5/58	11/29/58	2	44.0	42.2	43.2	14.5	12.9	13.8	129	79	107	400	288	349	432	336	380[a]
180615	WF1S	12/ 8/58	12/ 2/58	2	43.4	42.2	42.9	15.2	13.9	14.3	127	89	109	384	288	339[a]	400	336	371[a]
180655	WF1S	12/15/58	12/ 5/58	2	44.0	42.2	43.2	14.2	13.1	13.6	133	91	113	416	320	355[a]	416	360	391[a]
180656	----	12/15/58	12/ 7/58	2	43.4	42.0	42.8	14.7	13.0	13.8	135	88	114	400	288	356	464	368	400[a]
180705	WF1S	12/22/58	12/13/58	2	44.0	41.2	42.9	14.4	13.3	14.0	123	88	107	376	304	347[a]	408	312	384[a]
Current Mill Average:							43.1			13.9			109			349			383
Cumulative Mill Average:							43.5			12.9			113			340			387
Mill Factor, %							99.1			107.8			96.5			102.6			99.0
Mill Index, %							99.5			109.4			97.3			105.1			101.9

TABLE XII

MILL J -- 42-LB. LINERBOARD

180724	W.F.	12/24/58	11/16/58	1	44.4	42.2	43.8	14.0	12.3	13.0	141	92	115	352	272	316[a]	424	336	369[a]
Current Mill Average:							43.8			13.0			115			316			369
Cumulative Mill Average:							43.5			12.7			110			291			352
Mill Factor, %							100.7			102.4			104.5			108.6			104.8
Mill Index, %							101.2			102.4			102.7			95.2			98.1

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XIII

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180582	W.F.	12/ 4/58	11/26/58	-	45.8	42.0	43.8	13.4	12.0	12.8	133	89	109	368	272	319[a]	400	312	357[a]
180583	W.F.	12/ 4/58	11/27/58	-	47.0	44.2	46.3	13.9	12.9	13.2	159	104	121	376	320	348[a]	440	368	401[a]
180584	W.F.	12/ 4/58	11/28/58	-	44.0	43.4	43.8	14.1	13.0	13.5	128	93	107	400	288	340[a]	416	320	382[a]
180611	W.F.	12/ 8/58	12/ 3/58	-	44.8	44.0	44.3	13.1	12.3	12.8	140	97	118	368	272	317	392	336	362[a]
180612	W.F.	12/ 8/58	12/ 4/58	-	44.2	43.2	44.0	12.8	11.5	12.3	131	95	118	360	288	323[a]	392	296	350[a]
180613	W.F.	12/ 8/58	12/ 5/58	-	43.0	40.2	41.4	13.7	12.3	13.0	114	80	101	344	272	314[a]	392	320	360[a]
180687	W.F.	12/18/58	12/10/58	-	45.0	43.6	44.2	13.2	12.1	12.6	129	90	113	392	304	363[a]	392	344	371[a]
180688	W.F.	12/18/58	12/11/58	-	44.4	43.0	43.8	13.0	12.0	12.5	147	100	121	392	288	343[a]	400	344	377[a]
180689	W.F.	12/18/58	12/12/58	-	44.4	42.8	43.3	12.8	12.0	12.3	132	86	111	352	280	321[a]	384	312	353[a]
Current Mill Average:							43.9			12.8			113			332			368
Cumulative Mill Average:							44.3			12.7			110			336			368
Mill Factor, %							99.1			100.8			102.7			98.8			100.0
Mill Index, %							101.4			100.8			100.9			100.0			97.9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XIV

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180546	W.F.	12/ 1/58	11/14/58	-	44.4	42.6	43.5	13.0	12.1	12.5	120	92	110	368	296	337[a]	408	344	378[a]
180547	W.F.	12/ 1/58	11/14/58	-	44.4	42.0	43.0	13.1	12.0	12.5	127	81	106	368	288	330[a]	392	328	361[a]
180579	W.F.	12/ 3/58	11/24/58	-	43.6	42.4	43.0	13.2	12.2	12.6	122	96	112	384	296	339[a]	392	336	359[a]
180580	W.F.	12/ 3/58	11/24/58	-	43.8	42.2	42.9	13.0	12.1	12.6	126	96	111	352	296	323[a]	400	328	357[a]
Current Mill Average:							43.1			12.5			110			332			364
Cumulative Mill Average:							43.6			12.3			112			356			368
Mill Factor, %							98.9			101.6			98.2			93.3			98.9
Mill Index, %							99.5			98.4			98.2			100.0			96.8

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XV

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180622	W.F.	12/ 9/58	11/23/58	2	45.0	43.6	44.4	12.8	11.5	12.2	133	97	118	368	288	333	432	352	390[a]
180623	W.F.	12/ 9/58	11/25/58	2	45.0	43.4	44.0	13.2	12.1	12.6	143	95	120	416	336	378	440	392	422[a]
180642	W.F.	12/11/58	12/ 4/58	2	44.0	43.2	43.6	12.2	11.8	12.0	129	102	117	376	288	331[a]	432	360	387[a]
180643	W.F.	12/11/58	12/ 4/58	2	44.0	42.8	43.3	12.4	11.4	12.0	133	95	116	352	304	329[a]	432	376	404[a]
180647	W.F.	12/15/58	12/ 8/58	2	44.0	43.6	43.9	12.9	11.9	12.2	136	104	118	392	320	364[a]	464	360	398[a]
180648	W.F.	12/15/58	12/ 8/58	2	44.2	43.2	43.7	12.7	11.8	12.2	140	99	118	392	288	347	432	368	397[a]
Current Mill Average:							43.8			12.2			118			347			400
Cumulative Mill Average:							43.7			12.3			117			328			381
Mill Factor, %							100.2			99.2			100.9			105.8			105.0
Mill Index, %							101.2			96.1			105.4			104.5			106.4

TABLE XVI

MILL N -- 42-LB. LINERBOARD

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XVII

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb. Max.	Basis Weight, lb. Min.	Basis Weight, lb. Av.	Caliper, points Max.	Caliper, points Min.	Caliper, points Av.	Bursting Strength, p.s.i. gage Max.	Bursting Strength, p.s.i. gage Min.	Bursting Strength, p.s.i. gage Av.	Elmendorf Tear, g./sheet In Max.	Elmendorf Tear, g./sheet In Min.	Elmendorf Tear, g./sheet In Av.	Elmendorf Tear, g./sheet Across Max.	Elmendorf Tear, g./sheet Across Min.	Elmendorf Tear, g./sheet Across Av.
No samples submitted.																			

TABLE XVIII

MILL P -- 42-LB. LINERBOARD

No samples submitted.

TABLE XIX

MILL Q -- 42-LB. LINERBOARD

180537	WF1S	12/ 1/58	11/14/58	1	43.6	42.6	43.1	13.3	12.4	12.8	126	93	109	368	264	316[a]	368	312	335[a]
180538	WF1S	12/ 1/58	11/14/58	1	43.4	42.3	43.0	13.4	12.4	12.8	127	93	110	368	296	327[a]	376	312	345[a]
180581	WF1S	12/ 4/58	11/27/58	1	44.0	42.0	43.0	13.9	12.5	13.2	128	102	115	368	288	325[a]	432	336	369[a]
180646	WF1S	12/15/58	12/ 9/58	1	43.4	42.0	42.8	13.2	12.3	12.8	122	85	106	368	296	327[a]	392	328	361[a]
Current Mill Average:							43.0			12.9			110			324			353
Cumulative Mill Average:							43.2			13.2			112			321			369
Mill Factor, %							99.5			97.7			98.2			100.9			95.7
Mill Index, %							99.3			101.6			98.2			97.6			93.9

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XX

MILL S -- 42-LB. LINERBOARD

File No.	Finish	Date Recd.	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
														In			Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180625	W.F.	12/10/58	11/18/58	1	44.0	42.4	43.3	13.6	12.4	13.0	137	102	121	336	264	293	400	344	372[a]
180626	W.F.	12/10/58	11/22/58	1	44.0	42.0	43.0	14.0	13.1	13.5	142	89	119	336	280	312	384	320	352[a]
180699	W.F.	12/19/58	11/24/58	1	43.4	42.0	42.9	13.5	12.4	13.0	132	86	111	344	248	301[a]	416	304	360[a]
180700	W.F.	12/19/58	11/27/58	1	44.4	43.0	43.6	13.9	12.3	13.2	141	96	114	328	272	296[a]	408	336	372[a]
180722	W.F.	12/24/58	12/ 2/58	1	43.0	42.0	42.4	13.4	12.4	12.9	144	87	120	328	248	287	392	328	360[a]
180723	W.F.	12/24/58	12/ 7/58	1	43.2	42.0	42.6	14.2	13.2	13.7	135	94	112	328	264	297	392	352	372[a]
Current Mill Average:							43.0			13.2			116			298			364
Cumulative Mill Average:							43.0			13.4			114			292			359
Mill Factor, %							100.0			98.5			101.8			102.1			101.7
Mill Index, %							99.3			103.9			103.6			89.8			96.8

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

SUMMARY OF INSTITUTE DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXI

MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date Recd	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet In			Elmendorf Tear, g./sheet Across		
					Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.	Max.	Min.	Av.
180557	W.B.	12/ 2/58	11/13/58	-	44.0	42.2	43.4	13.1	12.0	12.5	133	93	110	376	280	342[a]	424	352	393[a]
180701	W.B.	12/19/58	12/ 8/58	-	44.2	42.4	43.5	13.0	12.0	12.4	133	94	108	464	328	381[a]	464	384	421[a]
180702	W.B.	12/19/58	12/ 8/58	-	44.4	42.2	43.3	12.9	12.0	12.4	130	84	109	424	304	378[a]	472	368	419[a]
180707	W.B.	12/22/58	12/ 9/58	-	45.2	43.2	44.2	13.6	12.3	13.1	124	89	108	464	304	365[a]	464	392	431[a]
180706	W.B.	12/22/58	12/ 9/58	-	45.0	42.4	44.1	13.4	12.3	12.9	131	83	109	432	344	385[a]	456	392	433[a]
180708	W.B.	12/22/58	12/10/58	-	45.0	43.0	44.2	13.2	12.6	13.0	123	88	108	464	376	413[a]	424	368	399[a]
180709	W.B.	12/22/58	12/10/58	-	46.2	44.4	45.1	13.3	12.3	12.9	120	88	107	400	304	364[a]	432	360	396[a]
180710	W.B.	12/22/58	12/10/58	-	44.8	42.6	43.9	13.3	12.4	12.9	124	97	109	448	360	394[a]	432	368	397[a]
180711	W.B.	12/22/58	12/ 9/58	-	45.6	42.8	44.4	13.2	12.2	12.7	123	90	108	424	312	369[a]	440	360	410[a]
180712	W.B.	12/22/58	12/10/58	-	45.4	42.6	44.4	13.6	12.9	13.2	127	96	111	456	344	401[a]	472	392	426[a]
180713	W.B.	12/22/58	12/12/58	-	44.4	42.6	43.6	13.0	11.9	12.3	128	94	114	448	336	383[a]	448	376	406[a]
180714	W.B.	12/22/58	12/12/58	-	44.6	42.4	43.6	13.2	12.1	12.8	129	90	111	456	288	369[a]	512	352	407[a]
Current Mill Average:							44.0			12.8			109			379			411
Cumulative Mill Average:							42.9			12.0			113			365			406
Mill Factor, %							102.6			106.7			96.5			103.8			101.2
Mill Index, %							101.6			100.8			97.3			114.2			109.3

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

TABLE XXI-A

SUMMARY OF SHEET FINISH DATA

Mill Code	(No. of Sample Lots) Finish W.F.	W.F.l.S.	Other
A	No samples submitted.		
B		4	
C	9		
D	6		
E	3		
F	20		
G		6	1[a]
H	No samples submitted.		
I		4	2[a]
J	1		
K	9		
L	4		
M	6		
N	No samples submitted.		
O	No samples submitted.		
P	No samples submitted		
Q		4	
S	6		
T	12[b]		
Totals	76	18	3

[a] Unidentified.
[b] W.B.

PART II. DISCUSSION AND COMPARISON OF RESULTS OBTAINED AT THE INSTITUTE OF PAPER CHEMISTRY WITH THOSE OBTAINED AT THE MILLS

As a supplementary part of the Continuous Baseline Study, comparisons of the mill test results with those obtained at The Institute of Paper Chemistry on corresponding samples have been included in this report. Mill test conditions are shown in Table XXII, where it may be noted that the atmospheric conditions used prior to and during the testing period were relatively uniform for the mills which reported this information. However, the preconditioning and conditioning time periods varied considerably.

A summary of the Institute and mill test results for the current period is shown in Table XXIII, and a comparison of differences between Institute and mill test results is given in Table XXIV for the current period and the two previous periods.

A comparison of the test data in Tables XXIII and XXIV reveals the level of agreement between mill and Institute data for basis weight, caliper, bursting strength, and Elmendorf tear. Table XXIII shows the over-all average difference between Institute and mill results for each of these tests based on the data for all sample lots submitted by each mill for the current period. In addition, the maximum difference encountered in comparing the Institute and mill test results for a given sample lot is shown. In Table XXIV, the over-all average differences shown for each test in Table XXIII have been calculated on a percentage basis for each mill. In addition, for purposes of comparison, the average percentage differences for the preceding two periods are shown.

TABLE XXII

PRECONDITIONING AND CONDITIONING DATA FOR THE MILL TESTS

Mill Code	Preconditioning R.H., %	Preconditioning Temperature, °F.	Preconditioning Time, hr.	Conditioning R.H., %	Conditioning Temperature, °F.	Conditioning Time, hr.
A			No samples submitted.			
B	50	73	95-120	50	73	2
C	50	73	24	50	73	24
D		None		50	75	24
E	50	73	24	50	73	24
F		None		50	73	24-48
G	50	72	24		None	
H			No samples submitted.			
I	50-51	70-72	24	50-51	70-72	24
J	46	71	0.5	50	73	48
K	34-35	77	8	48-52	73	16
L		None		50	73	0.5
M		None		50	73	24
N			No samples submitted.			
O			No samples submitted.			
P			No samples submitted.			
Q		None		39-52	81-88	--
S		None		38-60	80-86	--
T		None		40-46	72-74	48

TABLE XXIII

SUMMARY OF TEST RESULT COMPARISONS (Average Mill and Institute Results)

Mills*	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T
No. Samples Compared	0	4	9	6	3	20	7	0	6	1	9	4	6	0	0	0	4	6	12
Basis Weight																			
Institute		43.3	43.8	43.5	44.3	43.7	43.0		43.1	43.8	43.9	43.1	43.8				43.0	43.0	44.0
Mill		42.5	43.4	43.1	43.9	42.9	43.7		43.0	42.8	42.7	43.2	42.9				42.5	42.1	42.8
Av. Diff.**		-0.8	-0.4	-0.4	-0.4	-0.8	+0.7		-0.1	-1.0	-1.2	+0.1	-0.9				-0.5	-0.9	-1.2
Max. Diff.***		-1.2	-1.0	-0.5	-0.6	-1.3	+1.0		-0.4	-1.0	-3.2	+0.2	-1.2				-1.1	-1.6	-1.6
Caliper																			
Institute		12.7	12.7	12.7	13.8	12.3	13.7		13.9	13.0	12.8	12.5	12.2				12.9	13.2	12.8
Mill		12.3	12.2	12.5	13.3	12.0	13.4		13.6	13.1	12.4	12.0	12.0				12.7	12.9	12.1
Av. Diff.**		-0.4	-0.5	-0.2	-0.5	-0.3	-0.3		-0.3	+0.1	-0.4	-0.5	-0.2				-0.2	-0.3	-0.7
Max. Diff.***		-0.5	-0.6	-0.4	-0.5	-0.5	-0.6		-0.4	+0.1	-0.8	-0.6	-0.6				-0.7	-0.8	-0.8
Bursting Strength																			
Institute		107	109	116	108	110	105		109	115	113	110	118				110	116	109
Mill		103	110	115	105	110	111		104	117	111	111	116				111	112	112
Av. Diff.**		-4	+1	-1	-3	0	+6		-5	+2	-2	+1	-2				+1	-4	+3
Max. Diff.***		-7	+5	-4	-4	-7	+10		-8	+2	- 10	+2	-3				±2	-12	+6
Tearing Strength, in																			
Institute		327	335	334	335	350	320		349	316	332	332	347				324	298	379
Mill		280	290	330	305	317	326		312	303	328	313	325				348	271	331
Av. Diff.**		-47	-45	-4	-30	-33	+6		-37	-13	-4	-19	-22				+24	-27	-48
Max. Diff.***		-62	-58	-18	-33	-62	+26		-59	-13	-62	-24	-51				+64	-49	-109
Tearing Strength, across																			
Institute		379	382	385	367	390	351		383	369	368	364	400				353	364	411
Mill		361	344	389	366	383	372		377	390	355	366	393				362	358	388
Av. Diff.**		-18	-38	+4	-1	-7	+21		-6	+21	-13	+2	-7				+9	-6	-23
Max. Diff.***		-29	-52	+29	-25	-34	+40		-26	+21	-34	+19	-28				-81	-41	-61

* Comparison based on averages involved only those samples on which mill test data were submitted.
** Average difference is the difference between the Institute mill average and the mill average based on mill test data.
*** Maximum difference encountered in comparing the Institute average and the mill averages for any sample submitted by that particular mill.

TABLE XXIV

COMPARISON OF INSTITUTE-MILL DIFFERENCES BY PERIODS
Average Difference, Per Cent

Mill	Period	Basis Weight	Caliper	Burst	Tear, in	Tear, across
A	Current	--	--	--	--	--
	138th	--	--	--	--	--
	136th	--	--	--	---	--
B	Current	-2	-2	-4	-14	-5
	138th	-2	-5	-5	-13	-5
	136th	-0.7	-5	-5	-12	-3
C	Current	-0.9	-4	+0.9	-13	-10
	138th	-0.2	-2	0	-11	-6
	136th	-0.2	-3	0	-23	-16
D	Current	-0.9	-2	-0.9	-1	+1
	138th	-1	-2	+0.9	+8	+7
	136th	-0.9	-2	0	+17	+12
E	Current	-0.9	-4	-3	-9	-0.3
	138th	-2	-2	-2	-5	+5
	136th	-0.2	-4	-3	-0.3	+5
F	Current	-2	-2	0	-9	-2
	138th	-2	-3	-0.9	-8	+1
	136th	-1	-0.8	0	-7	+2
G	Current	+2	-2	+6	+2	+6
	138th	+0.5	-0.7	+0.9	-0.6	+4
	136th	+1	-1	-0.9	+6	+9
H	Current	--	--	--	--	--
	138th	-2	-2	-0.9	+10	+0.8
	136th	-1	-0.8	-0.9	+12	+4
I	Current	-0.2	-2	-5	-11	-2
	138th	-1	-1	-3	-1	+6
	136th	0	+2	-6	+1	+5
J	Current	-2	+0.2	+ 2	-4	+6
	138th	-3	0	+2	-4	+2
	136th	-2	-2	+6	+2	+5
K	Current	-3	-3	-2	-1	-4
	138th	-2	-2	0	-4	-5
	136th	-1	-3	-2	-5	-6
L	Current	+0.2	-4	+0.9	-6	+0.5
	138th	-1	-0.8	-0.9	-8	-3
	136th	-2	-2	-3	-10	-2
M	Current	-2	-2	-2	-6	-2
	138th	-1	-2	0	-0.9	0
	136th	-1	-0.8	+2	+0.6	+1
N	Current	--	--	--	--	--
	138th	---	--	--	--	--
	136th	-0.7	+0.8	-4	--	--
O	Current	--	--	--	--	--
	138th	--	--	--	--	--
	136th	--	--	--	--	--
P	Current	--	--	--	--	--
	138th	-2	-5	+0.9	-10	-9
	136th	-0.7	-2	+2	-3	+3
Q	Current	-1	-2	+0.9	+7	+3
	138th	--	---	--	--	--
	136th	-0.7	-0.8	+2	+13	+13
S	Current	-2	-2	-3	-9	-2
	138th	-3	-4	-3	-9	+0.8
	136th	-2	-2	-0.9	-6	+0.8
T	Current	-3	-5	+3	-13	-6
	138th	-3	-4	+3	-12	-3
	136th	-2	-4	0	-9	-4

It may be noted in Table XXIV that for the current period the largest average difference (per cent) between the average basis weight results of the Institute and those of a given mill on corresponding samples is three per cent. By comparison, the largest average difference (per cent) noted for the previous two periods was also three per cent. Further, it may be noted that the average basis weight results for Mills G and L were higher than that for the Institute, and the average results for the other mills were lower. The variations of 1 lb. or more for Mills J, K, and T may be excessive.

The maximum variation in caliper for the current period is five per cent. This is the same as the maximum variation for the previous two periods. Compared with the Institute's results, the average test result for Mill J was higher, and the average test results for the other mills were lower. The variations of 0.5 point or more for Mills C, E, L, and T may be excessive.

It may be noted in Table XXIV that the bursting strength results exhibited a maximum variation of six per cent for the current period. The average results for Mills C, G, J, L, Q, and T were higher than those for the Institute, the average result for Mill F was the same, and the average results for the other mills were lower. None of the variations appear to be exceptionally large with the possible exception of that for Mill G. Agreement between Institute and mill results is very good.

It may be seen in Tables XXIII and XXIV that the average machine direction tear results for Mills G and Q were higher than those for the Institute, and the average results for the other mills were lower.

The maximum variation for the current period was fourteen per cent. Agreement between the Institute and mill results is good in most cases. However, several mills--namely, B, C, I, and T--are associated with differences greater than ten per cent which may be excessive.

With regard to the cross-machine direction tear results, it may be noted that the average results for Mills D, G, J, L, and Q were higher than those for the Institute, and the average results for the other mills were lower. The maximum variation for the current period was ten per cent. As in the case of the machine direction results, agreement between Institute and mill results is good.

The comparisons of Institute and mill data for individual sample lots are given in Tables XXV to XLIII for the various mills. In all the comparisons given in Tables XXV to XLIII, the Institute's test values have been used as the reference line.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958

TABLE XXV

MILL A -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet In			Elmendorf Tear, g./sheet Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
No samples submitted																		

TABLE XXVI

MILL B -- 42-LB. LINERBOARD

180703	WF1S	12/ 4/58	1	44.0	42.8	-1.2	13.1	12.6	-0.5	107	103	-4	343[a]	281	-62	395[a]	371	-24
180704	WF1S	12/ 5/58	1	43.6	42.6	-1.0	12.7	12.3	-0.4	108	109	+1	325[a]	270	-55	378[a]	349	-29
180721	WF1S	12/ 8/58	1	43.0	42.5	-0.5	12.7	12.4	-0.3	103	96	-7	313[a]	284	-29	361[a]	351	-10
180720	WF1S	12/ 8/58	1	42.5	42.0	-0.5	12.3	11.9	-0.4	109	103	-6	326[a]	285	-41	381[a]	371	-10
Current Mill Average:				43.3	42.5	-0.8	12.7	12.3	-0.4	107	103	-4	327	280	-47	379	361	-18

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXVII

MILL C -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180614	W.F.	11/21/58	2	43.8	43.4	-0.4	12.7	12.2	-0.5	108	109	+1	335	285	-50	374[a]	352	-22
180627	W.F.	12/ 3/58	2	42.5	42.0	-0.5	12.3	11.8	-0.5	113	111	-2	309	260	-49	366[a]	327	-39
180628	W.F.	12/ 3/58	2	42.3	42.3	0.0	12.3	11.8	-0.5	108	108	0	325	267	-58	379[a]	338	-41
180649	W.F.	12/ 5/58	2	43.5	43.0	-0.5	12.9	12.4	-0.5	102	107	+5	340	294	-46	379[a]	339	-40
180650	W.F.	12/ 9/58	2	43.4	42.9	-0.5	13.0	12.4	-0.6	101	105	+4	313	281	-32	368[a]	331	-37
180651	W.F.	12/ 9/58	2	44.4	43.9	-0.5	12.8	12.4	-0.4	112	112	0	361[a]	311	-50	393[a]	341	-52
180652	W.F.	12/10/58	2	44.4	44.1	-0.3	12.4	12.0	-0.4	110	109	-1	344[a]	302	-42	378[a]	343	-35
180653	W.F.	12/10/58	2	44.2	44.2	0.0	12.8	12.4	-0.4	112	113	+1	338[a]	314	-24	396[a]	358	-38
180654	W.F.	12/11/58	2	45.7	44.7	-1.0	13.0	12.5	-0.5	114	114	0	355[a]	297	-58	404[a]	367	-37
Current Mill Average:				43.8	43.4	-0.4	12.7	12.2	-0.5	109	110	+1	335	290	-45	382	344	-38

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXVIII

MILL D -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180636	W.F.	11/13/58	2	43.8	43.4	-0.4	12.7	12.5	-0.2	116	112	-4	342	336	- 6	386[a]	388	+ 2
180644	W.F.	11/18/58	2	43.6	43.1	-0.5	12.5	12.4	-0.1	115	116	+1	336	319	-17	380[a]	375	- 5
180645	W.F.	11/19/58	2	43.6	43.2	-0.4	12.6	12.4	-0.2	115	115	0	334	340	+ 6	369[a]	398	+29
180725	W.F.	11/24/58	2	43.6	43.1	-0.5	12.6	12.5	-0.1	117	118	+1	317[a]	320	+ 3	373[a]	379	+ 6
180726	W.F.	11/25/58	2	43.2	43.0	-0.2	13.0	12.6	-0.4	116	114	-2	331[a]	340	+ 9	399[a]	397	- 2
180727	W.F.	12/ 6/58	2	43.1	42.9	-0.2	13.0	12.7	-0.3	116	114	-2	343[a]	325	-18	402[a]	394	- 8
Current Mill Average:				43.5	43.1	-0.4	12.7	12.5	-0.2	116	115	-1	334	330	- 4	385	389	+ 4

TABLE XXIX

MILL E -- 42-LB. LINERBOARD

180616	W.F.	11/13/58	1	43.6	43.7	+0.1	13.9	13.4	-0.5	109	105	-4	343[a]	318	-25	347[a]	370	-23
180617	W.F.	11/25/58	1	44.9	44.3	-0.6	13.9	13.5	-0.4	109	106	-3	344	310	-34	390[a]	365	-25
180618	W.F.	11/28/58	1	44.4	43.8	-0.6	13.6	13.1	-0.5	104	104	0	319[a]	286	-33	365[a]	362	- 3
Current Mill Average:				44.3	43.9	-0.4	13.8	13.3	-0.5	108	105	-3	335	305	-30	367	366	- 1

[a] Unit average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXX

MILL F -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180539	W.F.	11/18/58	-	44.4	43.8	-0.6	13.0	12.8	-0.2	104	107	+3	341[a]	332	- 9	397[a]	396	- 1
180540	W.F.	11/18/58	-	44.0	43.8	-0.2	12.9	12.6	-0.3	109	108	-1	363[a]	324	-39	396[a]	375	-21
180541	W.F.	11/17/58	-	42.8	42.0	-0.8	12.1	11.7	-0.4	105	108	+3	350	299	-51	368[a]	368	0
180542	W.F.	11/13/58	-	43.8	43.0	-0.8	12.5	12.3	-0.2	106	108	+2	360[a]	324	-36	392[a]	379	-13
180543	W.F.	11/14/58	-	43.2	42.3	-0.9	12.0	11.8	-0.2	107	108	+1	331[a]	316	-15	363[a]	372	+ 9
180544	W.F.	11/14/58	-	43.6	42.7	-0.9	12.6	12.2	-0.4	101	98	-3	341[a]	327	-14	381[a]	381	0
180545	W.F.	11/14/58	-	44.3	44.2	-0.1	11.9	11.8	-0.1	114	115	+1	359[a]	328	-31	397[a]	399	+ 2
180529	W.F.	11/13/58	-	44.0	42.8	-1.2	12.6	12.2	-0.4	114	110	-4	359[a]	311	-48	411[a]	377	-34
180630	W.F.	11/14/58	-	43.8	42.9	-0.9	12.1	11.8	-0.3	115	118	+3	345[a]	291	-54	399[a]	372	-27
180631	W.F.	11/14/58	-	44.0	43.0	-1.0	11.6	11.6	0.0	110	113	+3	364	313	-51	405[a]	384	-21
180632	W.F.	12/ 1/58	-	43.7	42.8	-0.9	12.6	12.2	-0.4	114	112	-2	365	317	-48	392[a]	380	-12
180633	W.F.	12/ 2/58	-	42.5	42.2	-0.3	11.9	11.6	-0.3	114	116	+2	321[a]	315	- 6	376[a]	393	+17
180634	W.F.	12/ 2/58	-	43.8	42.6	-1.2	12.4	12.1	-0.3	112	105	-7	351[a]	321	-30	390[a]	377	-13
180635	W.F.	12/ 4/58	-	43.6	42.3	-1.3	12.2	11.8	-0.4	114	111	-3	341[a]	331	-10	386[a]	405	+19
180690	W.F.	12/ 6/58	-	43.5	42.9	-0.6	12.2	11.9	-0.3	114	109	-5	344[a]	303	-41	390[a]	375	-15
180691	W.F.	12/ 7/58	-	43.5	54.0	-0.5	12.6	12.3	-0.3	110	109	-1	359[a]	339	-20	384[a]	411	+27
180692	W.F.	12/ 8/58	-	43.2	42.4	-0.8	12.1	11.9	-0.2	115	111	-4	334[a]	301	-33	392[a]	397	+ 5
180693	W.F.	12/10/58	-	43.9	43.3	-0.6	12.6	12.2	-0.4	108	108	0	373[a]	311	-62	411[a]	380	-31
180694	W.F.	12/11/58	-	43.5	43.0	-0.5	12.7	12.2	-0.5	109	113	+4	354[a]	313	-41	385[a]	371	-14
180695	W.F.	12/11/58	-	44.5	43.8	-0.7	12.0	12.0	0.0	112	113	+1	337[a]	328	- 9	389[a]	369	-20
Current Mill Average:				43.7	42.9	-0.8	12.3	12.0	-0.3	110	110	0	350	317	-33	390	383	- 7

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXXI

MILL G -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180657	WFIS	10/20/58	2	43.7	44.3	+0.6	14.2	14.2	0.0	105	106	+ 1	336[a]	330	- 6	361[a]	386	+25
180658	WFIS	10/27/58	2	43.0	43.7	+0.7	13.4	13.5	+0.1	111	113	+ 2	325[a]	324	- 1	359[a]	388	+29
180659	WFIS	11/ 2/58	2	41.9	42.8	+0.9	13.1	12.8	-0.3	104	114	+10	301[a]	301	0	335[a]	355	+20
180660	----	11/ 3/58	2	43.7	44.3	+0.6	14.0	13.5	-0.5	105	109	+ 4	327[a]	334	+ 7	358[a]	361	+ 3
180667	WFIS	11/10/58	2	43.3	44.3	+1.0	13.4	13.0	-0.4	104	114	+10	311[a]	332	+21	356[a]	363	+ 7
180668	WFIS	11/14/58	2	41.5	42.0	+0.5	13.1	12.5	-0.6	103	110	+ 7	301[a]	297	- 4	330[a]	355	+25
180669	WFIS	11/17/58	2	43.9	44.3	+0.4	14.6	14.5	-0.1	102	108	+ 6	337[a]	363	+26	355[a]	395	+40
Current Mill Average:				43.0	43.7	+0.7	13.7	13.4	-0.3	105	111	+ 6	320	326	+ 6	351	372	+21

TABLE XXXII

MILL H -- 42-LB. LINERBOARD

No samples submitted

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXXIII

MILL I -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180556	----	11/25/58	2	43.7	43.3	-0.4	13.8	13.6	-0.2	102	101	-1	348[a]	289	-59	375[a]	361	-14
180585	WFIS	11/29/58	2	43.2	42.9	-0.3	13.8	13.5	-0.3	107	104	-3	349	310	-39	380[a]	377	- 3
180615	WFIS	12/ 2/58	2	42.9	43.1	+0.2	14.3	14.0	-0.3	109	101	-8	339[a]	301	-38	371[a]	361	-10
180655	WFIS	12/ 5/58	2	43.2	42.8	-0.4	13.6	13.3	-0.3	113	107	-6	355[a]	333	-22	391[a]	390	- 1
180656	----	12/ 7/58	2	42.8	42.7	-0.1	13.8	13.6	-0.2	114	108	-6	356	328	-28	400[a]	416	+16
180705	WFIS	12/13/58	2	42.9	43.2	+0.3	14.0	13.6	-0.4	107	103	-4	347[a]	309	-38	384[a]	358	-26
Current Mill Average:				43.1	43.0	-0.1	13.9	13.6	-0.3	109	104	-5	349	312	-37	383	377	- 6

TABLE XXXIV

MILL J -- 42-LB. LINERBOARD

180724	W.F.	11/16/58	1	43.8	42.8	-1.0	13.0	13.1	+0.1	115	117	+2	316[a]	303	-13	369[a]	390	+21
Current Mill Average:				43.8	42.8	-1.0	13.0	13.1	+0.1	115	117	+2	316	303	-13	369	390	+21

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXXV

MILL K -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180582	W.F.	11/26/58	-	43.8	41.1	-2.7	12.8	12.0	-0.8	109	106	- 3	319[a]	332	+13	357[a]	347	-10
180583	W.F.	11/27/58	-	46.3	43.1	-3.2	13.2	12.5	-0.7	121	115	- 6	348[a]	352	+ 4	401[a]	367	-34
180584	W.F.	11/28/58	-	43.8	42.9	-0.9	13.5	13.0	-0.5	107	110	+ 3	340[a]	356	+16	382[a]	389	+ 7
180611	W.F.	12/ 3/58	-	44.3	41.8	-2.5	12.8	12.6	-0.2	118	110	- 8	317	305	-12	362[a]	345	-17
180612	W.F.	12/ 4/58	-	44.0	43.7	-0.3	12.3	12.2	-0.1	118	118	0	323[a]	317	- 6	350[a]	357	+ 7
180613	W.F.	12/ 5/58	-	41.4	42.4	+1.0	13.0	12.4	-0.6	101	102	+ 1	314[a]	315	+ 1	360[a]	337	-23
180687	W.F.	12/10/58	-	44.2	42.7	-1.5	12.6	12.1	-0.5	113	103	-10	363[a]	301	-62	371[a]	352	-19
180688	W.F.	12/11/58	-	43.8	42.9	-0.9	12.5	12.2	-0.3	121	119	- 2	343[a]	333	-10	377[a]	352	-25
180689	W.F.	12/12/58	-	43.3	43.3	0.0	12.3	12.5	+0.2	111	112	+ 1	321[a]	343	+22	353[a]	347	- 6
Current Mill Average:				43.9	42.7	-1.2	12.8	12.4	-0.4	113	111	- 2	332	328	- 4	368	355	-13

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXXVI

MILL L -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180546	W.F.	11/14/58	-	43.5	43.7	+0.2	12.5	12.1	-0.4	110	112	+2	337[a]	313	-24	378[a]	367	-11
180547	W.F.	11/14/58	-	43.0	43.2	+0.2	12.5	12.0	-0.5	106	108	+2	330[a]	315	-15	361[a]	364	+ 3
180579	W.F.	11/24/58	-	43.0	43.2	+0.2	12.6	12.0	-0.6	112	114	+2	339[a]	320	-19	359[a]	378	+19
180580	W.F.	11/24/58	-	42.9	42.8	-0.1	12.6	12.0	-0.6	111	111	0	323[a]	305	-18	357[a]	357	0
Current Mill Average:				43.1	43.2	+0.1	12.5	12.0	-0.5	110	111	+1	332	313	-19	364	366	+ 2

TABLE XXXVII

MILL M -- 42-LB. LINERBOARD

180622	W.F.	11/23/58	2	44.4	43.2	-1.2	12.2	11.9	-0.3	118	118	0	333	326	- 7	390[a]	385	- 5
180623	W.F.	11/25/58	2	44.0	43.3	-0.7	12.6	12.0	-0.6	120	119	-1	378	327	-51	422[a]	394	-28
180642	W.F.	12/ 4/58	2	43.6	42.4	-1.2	12.0	11.9	-0.1	117	115	-2	331[a]	327	- 4	387[a]	389	+ 2
180643	W.F.	12/ 4/58	2	43.3	42.8	-0.5	12.0	12.0	0.0	116	113	-3	329[a]	325	- 4	404[a]	396	- 8
180647	W.F.	12/ 8/58	2	43.9	42.9	-1.0	12.2	12.0	-0.2	118	116	-2	364[a]	321	-43	398[a]	397	- 1
180648	W.F.	12/ 8/58	2	43.7	42.8	-0.9	12.2	12.0	-0.2	118	116	-2	347	325	-22	397[a]	396	- 1
Current Mill Average:				43.8	42.9	-0.9	12.2	12.0	-0.2	118	116	-2	347	325	-22	400	393	- 7

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XXXVIII

MILL N -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Cross		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.

No samples submitted

TABLE XXXIX

MILL O -- 42-LB. LINERBOARD

No samples submitted

TABLE XL

MILL P -- 42-LB. LINERBOARD

No samples submitted

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XLI

MILL Q -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180537	AF1S	11/14/58	1	43.1	42.9	-0.2	12.8	12.8	0.0	109	111	+2	316[a]	380	+64	335[a]	401	+66
180538	AF1S	11/14/58	1	43.0	43.0	0.0	12.8	12.8	0.0	110	112	+2	327[a]	373	+46	345[a]	396	+51
180581	AF1S	11/27/58	1	43.0	41.9	-1.1	13.2	12.9	-0.3	115	113	-2	325[a]	344	+19	369[a]	288	-81
180646	AF1S	12/ 9/58	1	42.8	42.2	-0.6	12.8	12.1	-0.7	106	108	+2	327[a]	295	-32	361[a]	362	+ 1
Current Mill Average:				43.0	42.5	-0.5	12.9	12.7	-0.2	110	111	+1	324	348	+24	353	362	+ 9

TABLE XLII

MILL S -- 42-LB. LINERBOARD

180625	W.F.	11/18/58	1	43.3	41.8	-1.5	13.0	12.7	-0.3	121	110	-11	293	280	-13	371[a]	370	- 1
180626	W.F.	11/22/58	1	43.0	42.2	-0.8	13.5	12.9	-0.6	119	107	-12	312	273	-39	351[a]	366	-15
180699	W.F.	11/24/58	1	42.9	42.0	-0.9	13.0	12.8	-0.2	111	112	+ 1	301[a]	288	-13	361[a]	364	+ 3
180700	W.F.	11/27/58	1	43.6	42.0	-1.6	13.2	12.9	-0.3	114	111	- 3	296[a]	267	-29	369[a]	362	- 7
180722	W.F.	12/ 2/58	1	42.4	42.5	-0.1	12.9	12.9	0.0	120	116	- 4	287	270	-17	364[a]	355	- 9
180723	W.F.	12/ 7/58	1	42.6	41.8	-0.8	13.7	12.9	-0.8	112	117	- 5	297	248	-49	371[a]	330	-41
Current Mill Average:				43.0	42.1	-0.9	13.2	12.9	-0.3	116	112	- 4	298	271	-27	364	358	- 6

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

COMPARISON OF INSTITUTE AND MILL DATA--DECEMBER 1 THROUGH DECEMBER 31, 1958 (continued)

TABLE XLIII

MILL T -- 42-LB. LINERBOARD

File No.	Finish	Date Made	Mch. No.	Basis Weight, lb.			Caliper, points			Bursting Strength, p.s.i. gage			Elmendorf Tear, g./sheet					
													In			Across		
				IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.	IPC	Mill	Diff.
180557	W.B.	11/13/58	-	43.4	42.8	-0.6	12.5	12.2	-0.3	110	111	+1	342[a]	308	- 34	393[a]	391	- 2
180701	W.B.	12/ 8/58	-	43.5	41.9	-1.6	12.4	11.8	-0.6	108	113	+5	381[a]	321	- 60	421[a]	384	-37
180702	W.B.	12/ 8/58	-	43.3	42.1	-1.2	12.4	11.9	-0.5	109	109	0	378[a]	331	- 47	419[a]	400	-19
180707	W.B.	12/ 9/58	-	44.2	43.1	-1.1	13.1	12.3	-0.8	108	111	+3	365[a]	328	- 37	431[a]	412	-19
180706	W.B.	12/ 9/58	-	44.1	42.6	-1.5	12.9	12.2	-0.7	109	108	-1	385[a]	276	-109	433[a]	372	-61
180708	W.B.	12/10/58	-	44.2	43.1	-1.1	13.0	12.2	-0.8	108	108	0	413[a]	337	- 76	399[a]	359	-40
180709	W.B.	12/10/58	-	45.1	43.5	-1.6	12.9	12.2	-0.7	107	110	+3	364[a]	315	- 49	396[a]	366	-30
180710	W.B.	12/10/58	-	43.9	42.7	-1.2	12.9	12.2	-0.7	109	111	+2	394[a]	329	- 65	397[a]	372	-25
180711	W.B.	12/ 9/58	-	44.4	43.6	-0.8	12.7	12.1	-0.6	108	114	+6	369[a]	361	- 8	410[a]	419	+ 9
180712	W.B.	12/10/58	-	44.4	43.6	-0.8	13.2	12.6	-0.6	111	113	+2	401[a]	368	- 33	426[a]	385	-41
180713	W.B.	12/12/58	-	43.6	42.0	-1.6	12.3	11.6	-0.7	114	117	+3	383[a]	313	- 70	406[a]	363	-43
180714	W.B.	12/12/58	-	43.6	42.6	-1.0	12.8	12.1	-0.7	111	114	+3	369[a]	383	+ 14	407[a]	436	+29
Current Mill Average:				44.0	42.8	-1.2	12.8	12.1	-0.7	109	112	+3	379	331	- 48	411	388	-23

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

THE INSTITUTE OF PAPER CHEMISTRY

W. N. Hubert

W. N. Hubert, Research Aide

R C McKee

R. C. McKee, Chief
Container Section